

EDS-728 Series

24+4G-port Gigabit modular managed Ethernet switch



reddot design award
honourable mention 2008

- > 4 Gigabit plus 24 fast Ethernet ports for copper and fiber
- > Gigabit Turbo Ring and RSTP/STP (IEEE 802.1w/D) for Ethernet redundancy
- > QoS, IGMP snooping/GMRP, VLAN, LACP, SNMPv1/v2c/v3, RMON supported
- > IEEE 802.1X, HTTPS, and SSH enhance network security
- > ABC-01 (Automatic Backup Configurator) for system configuration backup



Introduction

The EDS-728 modular Gigabit Ethernet switch features a versatile modular design that allows different combinations of fiber and copper modules, creating a wide array of connection options ideal for any automation network. The modular design lets you install up to 4 Gigabit ports and 24 fast Ethernet ports. The EDS-728 is specially designed for redundant Gigabit network backbones and uses a modular configuration to provide a high degree of flexibility for network

expansion. Top network performance, security, and reliability is assured through the EDS-728's advanced management features, including QoS, IGMP snooping/GMRP, VLAN, LACP, SNMPv1/v2c/v3, RMON, IEEE 802.1X, HTTPS, and SSH. The EDS-728 also features industrial-grade construction, a console port for automatic configuration backup, and an angled LED troubleshooting panel that can be conveniently viewed from both horizontal and vertical orientations.

Features and Benefits

- Redundant Gigabit Turbo Ring and RSTP/STP (IEEE 802.1w/D)
- IGMP snooping and GMRP for filtering multicast traffic from industrial Ethernet protocols
- IEEE 802.1Q VLAN and GVRP protocol to ease network planning
- QoS-IEEE 802.1p/1Q and TOS/DiffServ to increase determinism
- Port Trunking for optimum bandwidth utilization
- IEEE 802.1X, HTTPS, and SSH to enhance network security
- SNMPv1/v2c/v3 for different levels of network management
- RMON for efficient network monitoring and proactive capability
- Bandwidth management prevents unpredictable network status
- Lock port for only authorized MAC address access
- Port mirroring for online debugging
- Automatic warning by exception through e-mail, relay output
- Digital inputs to integrate sensors and alarms with IP networks
- Redundant, dual DC power inputs
- IP30, rugged high-strength case
- DIN-Rail or panel mounting capability
- Configurable by Web browser, Telnet/Serial console, Windows utility, and ABC-01 automatic backup configurator

Specifications

Modular Managed Ethernet Switch System, EDS-72810G



Technology

Standards: IEEE 802.3 for 10BaseT,
IEEE 802.3u for 100BaseT(X) and 100Base FX,
IEEE 802.3ab for 1000BaseT(X),
IEEE 802.3z for 1000BaseSX/LX/LHX/ZX,
IEEE 802.3x for Flow Control,
IEEE 802.1D for Spanning Tree Protocol,

IEEE 802.1w for Rapid STP,
IEEE 802.1Q for VLAN Tagging,
IEEE 802.1p for Class of Service,
IEEE 802.1X for Authentication,
IEEE 802.3ad for Port Trunk with LACP

Protocols: IGMPv1/v2 device, GMRP, GVRP, SNMPv1/v2c/v3, DHCP Server/Client, DHCP Option 82, BootP, TFTP, SNTP, SMTP, RARP, RMON, HTTP, HTTPS, Telnet, SSH, Syslog

MIB: MIB-II, Ethernet-Like MIB, P-BRIDGE MIB, Q-BRIDGE MIB, Bridge MIB, RSTP MIB, RMON MIB Group 1, 2, 3, 9

Flow Control: IEEE 802.3x flow control, back pressure flow control

Switch Properties

Priority Queues: 4

Max. Number of Available VLANs: 64

VLAN ID Range: VID 1 to 4094

IGMP Groups: 256

Interface

Fast Ethernet: 6 slots for any combination of 4-port interface module with 10/100BaseT(X) or 100BaseFX

Gigabit Ethernet: 2 slots for any combination of 2-port interface module with 10/100/1000BaseT(X) or 1000BaseSFP slot

System LED Indicators: STAT, PWR1, PWR2, FAULT, MASTER, COUPLER, T.RING

Module LED Indicators: LNK/ACT, FDX/HDX, RING PORT, COUPLER PORT, SPEED

Alarm Contact: Two relay outputs with current carrying capacity of 1A @ 24 VDC

Digital Inputs: Two inputs with the same ground, but electrically isolated from the electronics.

- +13 to +30V for state “1”
- -30 to +3V for state “0”
- Max. input current: 8 mA

Power Requirements

Input Voltage: 24 VDC (12 to 45 VDC), redundant dual inputs

Input Current (@ 24 V): 0.96A

Connection: Two removable 6-pin terminal blocks

Overload Current Protection: Present

Reverse Polarity Protection: Present

Physical Characteristics

Casing: IP30 protection

Dimensions (W x H x D): 362.4 x 142.47 x 128 mm (14.27 x 5.61 x 5.04 in.)

Weight: 1950 g

Installation: DIN-Rail mounting, wall mounting (optional kit)

Environmental Limits

Operating Temperature: 0 to 60°C (32 to 140°F)

Storage Temperature: -40 to 85°C (-40 to 185°F)

Ambient Relative Humidity: 5 to 95% (non-condensing)

Regulatory Approvals

Safety: UL508 (Pending), UL60950-1, CSA C22.2 No. 60950-1, EN60950-1 (Pending)

Hazardous Location: UL/cUL Class I, Division 2, Groups A, B, C, and D (Pending); ATEX Class I, Zone 2, Ex nC IIC (Pending)

Maritime: DNV (Pending), GL (Pending)

EMI: FCC Part 15, CISPR (EN55022) class A

EMS: EN61000-4-2 (ESD), level 3

EN61000-4-3 (RS), level 3

EN61000-4-4 (EFT), level 3

EN61000-4-5 (Surge), level 3

EN61000-4-6 (CS), level 3

EN61000-4-8

EN61000-4-11

EN61000-4-12

Shock: IEC 60068-2-27

Freefall: IEC 60068-2-32

Vibration: IEC 60068-2-6

MTBF: 160,000 hrs

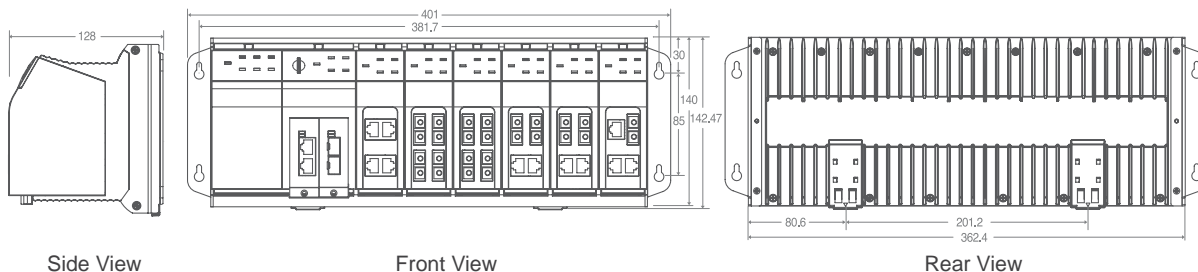
Database: Telcordia (Bellcore), GB

*Please check Moxa's website for the most up-to-date certification status.

Warranty

5 years (see www.moxa.com/warranty for details)

Dimensions (unit = mm)



: Ordering Information

Step 1: Select Ethernet switch system

EDS-72810G



Step 2: Select interface modules

IM series
(Gigabit or fast Ethernet)

* The EDS-72810G switch system is delivered without interface module. Please see page 1-11 for product information of IM series Gigabit and fast Ethernet interface modules.

Modular Managed Ethernet Switch System, EDS-72810G

Modular managed Ethernet switch system with 6 slots for 4-port fast Ethernet interface modules and 2 slots for 2-port Gigabit interface modules, up to 24+4G ports.

Optional Accessories

- **ABC-01:** Industrial RS-232, RJ45-based, automatic backup configurator
- **EDS-SNMP OPC Server Pro:** CD with EDS-SNMP OPC server software and manual
- **DR-4524:** 45W/2A DIN-Rail 24 VDC power supply, 85 to 264 VAC input
- **DR-75-24:** 75W/3.2A DIN-Rail 24 VDC power supply, 85 to 264 VAC input
- **DR-120-24:** 120W/5A DIN-Rail 24 VDC power supply, 88 to 132 VAC/176 to 264 VAC input by switch
- **WK-32:** Wall mounting kit for EDS-828/728 series
- **RK-4U:** 4U-high 19" rack mounting kit

IM Series

2-port Gigabit Ethernet and 4-port fast Ethernet interface modules for EDS-828/728 series Ethernet switches

: Specifications

Gigabit Ethernet Interface Modules, IM-2G Series



IM-2GTX

IM-2GSFP

Interface

LED Indicators: Port status

RJ45 Ports: 10/100/1000BaseT(X) auto negotiation speed and auto MDI/MDI-X connection

Fiber Ports: 1000BaseSFP slot

* Please see page 2-23 for the product information of SFP-1G series Gigabit Ethernet SFP modules.

Power Requirements

Power Consumption: IM-2GTX: 2.96W

IM-2GSFP: 3.042W

Physical Characteristics

Dimensions (W x H x D): 24 x 65.9 x 101.1 mm (0.94 x 2.59 x 3.98 in.)

Weight: IM-2GTX: 150 g

IM-2GSFP: 148 g

Fast Ethernet Interface Modules, IM Series



IM-4TX

IM-2MSC/2TX
IM-2SSC/2TX

IM-2MST/2TX

IM-1LSC/3TX

IM-4MSC
IM-4SSC

IM-4MST

Interface

LED Indicators: PWR, P1, P2, P3, P4 port status

RJ45 Ports: 10/100BaseT(X) auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection

Fiber Ports: 100BaseFX ports (SC/ST connector)

Optical Fiber

	100BaseFX		
	Multi Mode	Single Mode	Single Mode, 80 km
Wavelength	1300 nm	1310 nm	1550 nm
Max. TX	-10 dBm	0 dBm	0 dBm
Min. TX	-20 dBm	-5 dBm	-5 dBm
RX Sensitivity	-32 dBm	-34 dBm	-34 dBm
Link Budget	12 dB	29 dB	29 dB
Typical Distance	5 km ^a 4 km ^b	40 km ^c	80 km ^d
Saturation	-6 dBm	-3 dBm	-3 dBm

a. 50/125 μ m, 800 MHz*km fiber optic cable

b. 62.5/125 μ m, 500 MHz*km fiber optic cable

c. 9/125 μ m, 3.5 PS/(nm*km) fiber optic cable

d. 9/125 μ m, 19 PS/(nm*km) fiber optic cable

Power Requirements

Power Consumption:

IM-4TX: 2.5W

IM-2MSC/2TX: 5W

IM-2MST/2TX: 5W

IM-2SSC/2TX: 5W

IM-1LSC/3TX: 4W

IM-4MSC: 7.2W

IM-4MST: 7.2W

IM-4SSC: 7.2W

Physical Characteristics

Casing: IP30 protection

Dimensions (W x H x D): 40 x 127.8 x 100 mm (1.57 x 5.03 x 3.94 in.)

Weight (Gross Weight):

IM-4TX: 215 g

IM-2MSC/2TX: 245 g

IM-2MST/2TX: 250 g

IM-2SSC/2TX: 245 g

IM-1LSC/3TX: 235 g

IM-4MSC: 250 g

IM-4MST: 270 g

IM-4SSC: 270 g

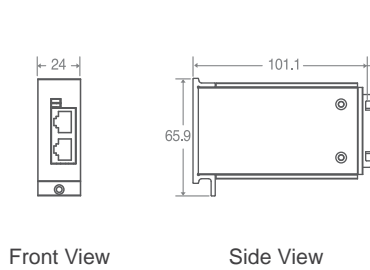
MTBF

620,000 hrs

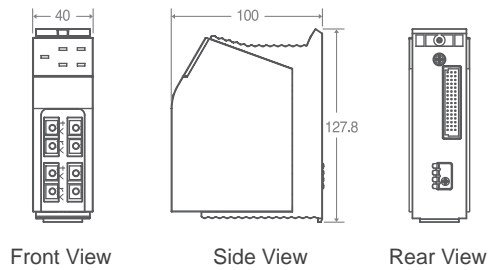
Database: MIL-HDBK-217F, GB 25°C

Dimensions (unit = mm)

Gigabit Ethernet Interface Modules



Fast Ethernet Interface Modules



Ordering Information

Product Model	Port Interface						
	Gigabit Ethernet		Fast Ethernet				
	10/100/1000BaseT(X)	1000BaseSFP*	10/100BaseT(X)	100BaseFX			
				Multi Mode, SC Connector	Multi Mode, ST Connector	Single Mode, SC Connector	Single Mode, SC Connector, 80 km
IM-2G Series							
IM-2GTX	2						
IM-2GSFP		2					
IM Series							
IM-4TX			4				
IM-4MSC				4			
IM-4MST					4		
IM-2MSC/2TX			2	2			
IM-2MST/2TX			2		2		
IM-4SSC						4	
IM-2SSC/2TX			2			2	
IM-1LSC/3TX			3				1

* IM-2GSFP supports 2 1000BaseSFP slots. Please see page 2-23 for the product information of SFP-1G series Gigabit Ethernet SFP modules.

SFP-1G Series

1G-port Gigabit Ethernet SFP modules



- > Compliant with IEEE 802.3z
- > Differential LVPECL inputs and outputs
- > Single power supply 3.3V
- > TTL signal detect indicator
- > Hot Pluggable
- > Class 1 laser product, complies with EN60825-1



: Specifications

Interface

Gigabit Port: 1 port

Connector: Duplex LC Connector or

Simplex LC Connector* (WDM-type only)

* WDM-type SFP modules must be used in pairs (e.g., SFP-1GXXALC and SFP-1GXXBLC)

Optical Fiber

	Gigabit Ethernet			
	SFP-SX	SFP-LX	SFP-LHX	SFP-ZX
Wavelength	850 nm	1310 nm	1310 nm	1550 nm
Max. TX	-4 dBm	-3 dBm	1 dBm	5 dBm
Min. TX	-9.5 dBm	-9.5 dBm	-4 dBm	0 dBm
RX Sensitivity	-18 dBm	-20 dBm	-24 dBm	24 dBm
Link Budget	8.5 dB	10.5 dB	20 dB	24 dB
Typical Distance	550 m ^a 275 m ^b	1100 m ^c 550 m ^d 10 km ^e	40 km ^e	80 km ^f
Saturation	0 dBm	-3 dBm	-3 dBm	-3 dBm

	Gigabit Ethernet					
	SFP-10A	SFP-10B	SFP-20A	SFP-20B	SFP-40A	SFP-40B
Wave-length	TX 1310 nm, RX 1550 nm	TX 1550 nm, RX 1310 nm	TX 1310 nm, RX 1550 nm	TX 1550 nm, RX 1310 nm	TX 1310 nm, RX 1550 nm	TX 1550 nm, RX 1310 nm
Max. TX	-3 dBm		-2 dBm		2 dBm	
Min. TX	-9 dBm		-8 dBm		-3 dBm	
RX Sensitivity	-21 dBm		-23 dBm		-23 dBm	
Link Budget	12 dB		15 dB		20 dB	
Typical Distance	10 km ^{ef}		20 km ^{ef}		40 km ^{ef}	
Saturation	-1 dBm		-1 dBm		-1 dBm	

- a. 50/125 μ m, 400 MHz*km fiber optic cable
 b. 62.5/125 μ m, 200 MHz*km fiber optic cable
 c. 50/125 μ m, 800 MHz*km fiber optic cable
 d. 62.5/125 μ m, 500 MHz*km fiber optic cable
 e. 9/125 μ m, 3.5 PS/(nm*km) fiber optic cable
 f. 9/125 μ m, 19 PS/(nm*km) fiber optic cable

Environmental Limits

Operating Temperature: 0 to 60°C (32 to 140°F)

-40 to 85°C (-40 to 185°F) for T models

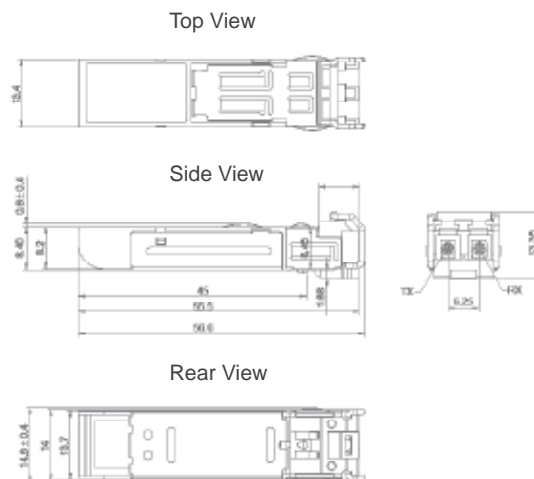
Storage Temperature: -40 to 85°C (-40 to 185°F)

Ambient Relative Humidity: 5 to 95% (non-condensing)

Regulatory Approvals

Safety: UL, TÜV, EN60825-1

Dimensions (unit = mm)



Ordering Information

SFP Modules

Product Model		Port Interface			
Standard Temperature (0 to 60°C)	Extended Temperature (-40 to 85°C)	1000BaseSX, LC Connector, 0.5 km	1000BaseLX, LC Connector, 10 km	1000BaseLHX, LC Connector, 40 km	1000BaseZX, LC Connector, 80 km
SFP-1GSXLC	SFP-1GSXLC-T*	1			
SFP-1GLXLC	SFP-1GLXLC-T		1		
SFP-1GLHXL	SFP-1GLHXL-T			1	
SFP-1GZXLC	SFP-1GZXLC-T				1

* SFP-1GSXLC-T: -20 to 75°C operating temperature

WDM-type (BiDi) SFP Modules

Product Model		Port Interface					
Standard Temperature (0 to 60°C)	Extended Temperature (-40 to 85°C)	1000BaseSFP, LC Connector, 10 km		1000BaseSFP, LC Connector, 20 km		1000BaseSFP, LC Connector, 40 km	
		TX 1310 nm, RX 1550 nm	TX 1550 nm, RX 1310 nm	TX 1310 nm, RX 1550 nm	TX 1550 nm, RX 1310 nm	TX 1310 nm, RX 1550 nm	TX 1550 nm, RX 1310 nm
SFP-1G10ALC	SFP-1G10ALC-T	1					
SFP-1G10BLC	SFP-1G10BLC-T		1				
SFP-1G20ALC	SFP-1G20ALC-T			1			
SFP-1G20BLC	SFP-1G20BLC-T				1		
SFP-1G40ALC	SFP-1G40ALC-T					1	
SFP-1G40BLC	SFP-1G40BLC-T						1

Matched Products

- **EDS-828/728 series:** IM-2GSFP series Gigabit Ethernet interface module
- **EDS-518A series:** 16+2G-port Gigabit managed Ethernet switches
- **EDS-510A series:** 7+3G-port Gigabit managed Ethernet switches
- **PT and IKS series:** PM-7200-2G/4G series Gigabit Ethernet interface modules
- **EDS-G308 series:** 8G-port full Gigabit unmanaged Ethernet switches
- **IMC-101G series:** Industrial Gigabit media converters